Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Streamlining Licensing Procedures for Small Satellites	)	IB Docket No. 18-86
	)	
	)	

COMMENTS OF INMARSAT INC.

Inmarsat Inc. ("Inmarsat") respectfully submits these Comments on the Federal Communications Commission ("Commission") initiative to streamline the licensing procedures for small satellites, in the above referenced Notice of Proposed Rulemaking ("NPRM").[1] Inmarsat supports the Commission's efforts to streamline the application and licensing of small satellites. These comments specifically address the use of MSS frequency bands for space-to-space links.

Inmarsat fully agrees with the Commission that there are many benefits to inter-satellite operations for small satellites and notes that the benefits of such operations are not limited to small satellites but encompass other types of non-geostationary (NGSO) satellites as well. The Commission is correct that MSS systems today provide a robust set of capabilities and the existing infrastructure is well suited to support this new application. The Commission's rules should ensure that *all* MSS systems are given the opportunity to provide inter-satellite links to NGSO systems.

[1] *Small Satellites*, IB Docket Number 18-86("NPRM")

As the Commission is aware, Inmarsat operates a fleet of GSO MSS systems in the frequency bands 1518-1559 MHz (space-to-Earth) and 1626.5-1660.5 MHz and 1668-1675 MHz (Earth-to-space). These bands are used for the service links to a broad range of terminals on ships and aircraft, and on land. Inmarsat has already developed and offers an Inter-satellite Data Relay Service (IDRS) to NGSO satellite operators[2]. The IDRS service employs our Inmarsat-4 MSS satellites and a version of the Inmarsat Broadband Global Area Network (BGAN) terminal that has been modified to operate on spacecraft. This service provides communication between the NGSO satellite and the Inmarsat-4 satellite and affords the NGSO operator the ability to connect with its NGSO satellites for nearly 100% of the time. As the Commission observed, offering a service, such as IDRS, will enhance and improve the operational efficiency of NGSO satellite operations globally. Without such an inter-satellite connection, communications with NGSO satellites is intermittent, as it is dependent on visibility to an earth station, which occurs only when the satellite is within line-of-sight of a cooperating earth station. By allowing inter-satellite links in the MSS, NGSO satellite operators will have access to on-demand 24/7, near real-time two way IP-based communication links to all of their satellites. This will benefit NGSO constellation operators by allowing them to rapidly respond to customer requirements and to address operational anomalies in their fleet that may arise. Inmarsat proposes that the Commission also allow operation of space-to-space links in the 1518-1559 MHz (space-to-Earth) and 1626.5-1660.5 MHz and 1668-1675 MHz (Earth-to-space) MSS allocations, as the Commission proposes for MSS spectrum used by the Globalstar and Iridium systems.

[2] See: http://spacenews.com/after-months-of-secret-in-space-testing-inmarsat-avis-satellite-data-relay-service-exits-stealth-mode/

Inmarsat believes that the approach of adding a parenthetical ‘space-to-space’ to the existing MSS allocations is appropriate to provide the required status for inter-satellite operation. However, for inter-satellite links between a NGSO satellite and a GSO satellite, Inmarsat is of the view that transmissions from a NGSO satellite to a GSO satellite should only occur in the band allocated to MSS (Earth-to-space) and, conversely, transmissions from a GSO satellite to a NGSO satellite should only occur in the band allocated for MSS (space-to-Earth). This may be achieved through supplementary footnotes to the MSS (space-to-space) allocations in the allocation table. An alternative approach that would also be acceptable to Inmarsat is to attach appropriate footnotes to the existing MSS (space-to-Earth) and MSS (Earth-to-space) allocations, without the need to add MSS (space-to-space) allocations in the Table. The 1518-1559 MHz (space-to-Earth) and 1626.5-1660.5 MHz and 1668-1675 MHz (Earth-to-space) MSS allocations where Inmarsat operates are shared between GSO MSS operators. Coordination of this spectrum among MSS operators is generally managed through regular multi-lateral coordination meetings between the operators and arranged by the relevant administrations. Any space-to-space transmissions will need to operate consistent with these agreements to ensure that there is no interference between MSS networks operating in the band. The approaches proposed above are consistent with this coordination process.

In the uplink bands, 1626.5-1660.5 MHz and 1668-1675 MHz, there is sharing with other services including Radio Astronomy, MetAids, the fixed service, the mobile service and the meteorological-satellite service. In general, the operation of terminals on board a NGSO spacecraft represents a more benign sharing situation with respect to these services compared with the operation of other MSS applications in this band, including aircraft terminals as the

transmitting terminal is in space. Therefore no significant interference issues to other services are anticipated.

Other allocations in the MSS downlink band 1518-1559 MHz include Fixed, Mobile, Space Operation and Earth exploration-satellite services. Since it is not expected that operation of inter-satellite links would increase the power levels transmitted from GSO MSS satellites, no adverse impact on these services is anticipated.

Inmarsat thanks the Commission for the opportunity to comment upon its initiative to streamline the licensing procedures for small satellites. Inmarsat supports these efforts and, as regards the use of MSS frequency bands for inter-satellite links with NGSO satellites, believes that the Commission's rules should ensure that *all* MSS systems, i.e. both GSO and NGSO, are afforded the opportunity to provide inter-satellite links to NGSO systems. As such, Inmarsat proposes that in developing rules under this proceeding the Commission allow the 1518-1559 MHz (space-to-Earth) and 1626.5-1660.5 MHz and 1668-1675 MHz (Earth-to-space) MSS allocation to operate space-to-space links as proposed above.

Respectfully submitted,

INMARSAT INC.

By: */s/ Jack Wengryniuk*
Jack Wengryniuk
Vice President, Regulatory and Market Access
Inmarsat Inc.
1101 Connecticut Avenue, NW
Suite 1200
Washington, D.C. 20036
(202) 248-5150

July 9, 2018